

UNITED STATES PATENT AND TRADEMARK OFFICE



UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Viginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,738	02/07/2002	Habib Vafi	112005	1395
27256	7590 07/31/2003			
ARTZ & ARTZ, P.C. 28333 TELEGRAPH RD. SUITE 250			EXAMINER	
			HANNAHER, CONSTANTINE	
SOUTHFIELD, MI 48034			ART UNIT	PAPER NUMBER
			2878	<u></u>
			DATE MAILED: 07/31/2003	

Please find below and/or attached an Office communication concerning this application or proceeding.

•		am
	Application No.	Applicant(s)
.	09/683,738	VAFI ET AL.
Office Action Summary	Examiner	Art Unit
	Constantine Hannaher	2878
The MAILING DATE of this communication Period for Reply	n appears on the cover sheet with	the correspondence address
A SHORTENED STATUTORY PERIOD FOR R THE MAILING DATE OF THIS COMMUNICATI - Extensions of time may be available under the provisions of 37 C after SIX (6) MONTHS from the mailing date of this communicatic - If the period for reply specified above is less than thirty (30) days, - If NO period for reply is specified above, the maximum statutory p - Failure to reply within the set or extended period for reply will, by - Any reply received by the Office later than three months after the earned patent term adjustment. See 37 CFR 1.704(b). Status	ON. FR 1.136(a). In no event, however, may a repon. a reply within the statutory minimum of thirty (period will apply and will expire SIX (6) MONTH statute, cause the application to become ABA	ly be timely filed 30) days will be considered timely. IS from the mailing date of this communication. NDONED (35 U.S.C. § 133).
1) Responsive to communication(s) filed or	1 <u></u> .	•
2a)☐ This action is FINAL . 2b)⊠	This action is non-final.	
3) Since this application is in condition for a closed in accordance with the practice u Disposition of Claims		
4) Claim(s) 1-18 is/are pending in the application	cation.	
4a) Of the above claim(s) is/are wit	hdrawn from consideration.	
5) Claim(s) is/are allowed.		·
6)⊠ Claim(s) <u>1-18</u> is/are rejected.		
7) Claim(s) is/are objected to.		
8) Claim(s) are subject to restriction a	and/or election requirement.	
Application Papers		
9) The specification is objected to by the Exa		
10) The drawing(s) filed on is/are: a)		
Applicant may not request that any objection	=	
11) The proposed drawing correction filed on		approved by the Examiner.
If approved, corrected drawings are required 12) The oath or declaration is objected to by the		
.—	ie Examiner.	
Priority under 35 U.S.C. §§ 119 and 120 13) Acknowledgment is made of a claim for for	oroign priority under 35 I I S C &	119(a) (d) or (f)
,—	oreign priority under 33 0.5.6. §	119(a)-(u) or (r).
a) ☐ All b) ☐ Some * c) ☐ None of:	monte have been received	
1. Certified copies of the priority docu2. Certified copies of the priority docu		olication No.
3. Copies of the certified copies of the application from the Internation* See the attached detailed Office action for	al Bureau (PCT Rule 17.2(a)).	
14) Acknowledgment is made of a claim for do	mestic priority under 35 U.S.C. §	119(e) (to a provisional application).
a) ☐ The translation of the foreign languag 15)☐ Acknowledgment is made of a claim for do		

Notice of References Cited (PTO-892)
 Notice of Draftsperson's Patent Drawing Review (PTO-948)
 Information Disclosure Statement(s) (PTO-1449) Paper No(s) _

Attachment(s)

6) Other:

Application/Control Number: 09/683,738

Art Unit: 2878

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

- 2. Claim 9 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not describe an *increase* in coolant flow rate when the detector panel temperature is *low*. Compare with claim 18.
- 3. The following is a quotation of the second paragraph of 35 U.S.C. 112:
 The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
- 4. Claims 8 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites the limitation "said narrow operating temperature range" in line 3. There is insufficient antecedent basis for this limitation in the claim. The last line of claim 3 establishes only "a operating temperature range." The balance of the claims is rejected on the basis of their dependence.

Claim Rejections - 35 USC § 103

- 5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the

Page: 2

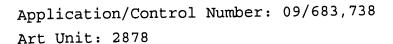
Application/Control Number: 09/683,738

Art Unit: 2878

subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

- 6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
- 7. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crawford et al. (US005970113A) in view of Nakagawa et al. (JP04315985A).

With respect to independent claim 1, Crawford *et al.* discloses a method for determining the temperature of a detector panel 130 having a plurality of photodiodes (column 11, line 49) in an x ray imaging system (*e.g.*, Fig. 4) at the time an x ray image is taken which comprises the steps of measuring an offset image value for at least one of the plurality of photodiodes of the detector panel 130 taken for at least two known temperatures without x ray (column 17, lines 54-56), extrapolating an offset image value versus temperature curve for each of the measured offset image values for each of the plurality of photodiodes (in view of the temperature dependence characterization, also described as a "function," see column 17, lines 61-67), and storing the curve within a processing circuit 134 coupled within the x ray imaging system. However, the method of Crawford *et al.* determines the temperature of the detector panel 130 using a sensor 521. Nakagawa *et al.* shows (Fig. 1) that it is long known to determine the temperature of a photoelectric transfer element 101 in an x ray detection system by measuring an offset value taken without an x ray (and stored in element



109) and comparing it using a predetermined equation to stored data regarding offset and temperature characteristics. Since an external sensor is not required and the construction of the system is simplified, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Crawford *et al.* to specify that processing circuit 134 determined the temperature of the detector panel 130 by measuring a second offset image value taken without an x ray for at least one of the plurality of photodiodes as suggested by Nakagawa *et al.*

With respect to dependent claim 2, the measurement "before actual scanning" as taught by Crawford *et al.* is a range which encompasses the recited time which is sufficient to anticipate or make obvious the recited time.

8. Claims 3-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crawford et al. (US005970113A) in view of Nakagawa et al. (JP04315985A) and Sasaki et al. (US006411672B1).

With respect to independent claim 3, the measuring, extrapolating, storing, and determining steps are suggested by Crawford et al. and Nakagawa et al. as explained above in the rejection of independent claim 1. While the method of Crawford et al. does not comprise the direct control of temperature of the detector panel 130, Sasaki et al. teaches that, in an x ray imaging system (Fig. 5) comprising a detector panel 25 having a plurality of solid state detection elements, the provision of a coldplate 42 and a conditioner unit 41 fluidically coupled 43 with the coldplate is known. The conditioner unit 41 in the system of Sasaki et al. is capable of maintaining the detector panel 25 within an operating temperature range. Since the photodiodes in the method of Crawford et al. will experience the difficulties Sasaki et al. describes for solid-state detection elements at column 1, lines 39-50, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Crawford et al. to comprise the step of providing a coldplate and

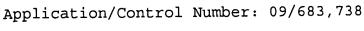
Art Unit: 2878

conditioner as suggested by Sasaki et al. in order to avoid the problem of temperature nonuniformity. The closed-loop cooling system suggested by Sasaki et al. is controlled (column 5, lines 38-40). In view of the desire to avoid the problem of temperature nonuniformity described by Sasaki et al. it would have been obvious to one of ordinary skill in the art at the time the invention was made to electrically couple the processing circuit 134 of Crawford et al. with the conditioner suggested by Sasaki et al. in order to control the degree of heating and cooling. Although the method of Crawford et al. uses sensor 521 to determine the temperature of the detector panel, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Crawford et al. to specify that processing circuit 134 directed a signal to the conditioner unit suggested by Sasaki et al. on the basis of the temperature of the detector panel 130 determined by the suggestion of Nakagawa et al. to effect the control Sasaki shows is beneficial while omitting the sensors otherwise required by Crawford et al.

With respect to dependent claim 4, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the electrical signal from processing circuit 134 of Crawford et al. to the conditioner unit 41 suggested by Sasaki et al. would effect any control of the apparatus suggested by Sasaki et al. in view of the multiple elements and the "the degree of heating and cooling" desired.

With respect to dependent claim 5, the measurement "before actual scanning" as taught by Crawford *et al.* is a range which encompasses the recited time which is sufficient to anticipate or make obvious the recited time.

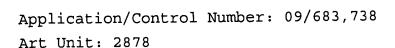
With respect to dependent claims 6, 7, 8, and 9 (as best understood), one of ordinary skill in the art must be presumed to know the manner of control suggested by Sasaki *et al.* (column 5, lines 38-40) and the recited procedures would have been obvious to one of ordinary skill in the art at the



Art Unit: 2878

time the invention was made in view of the "arbitrary type of coolant" and the control of "the degree of heating and cooling" described by Sasaki et al.

With respect to independent claim 10, Nakagawa et al. discloses a method comprising the steps of determining an amount of dark current (another name for leakage) exhibited by at least one photoelectric transfer element 101 immediately prior to x ray exposure. Crawford et al. teaches that it is typical for the photoelectric transfer element to be a photodiode (column 11, line 49) so it would have been obvious to one of ordinary skill in the art at the time the invention was made to specify that the element 101 in the method of Nakagawa et al. was a photodiode in view of the effective performance in detecting x rays (both methods operate through the intermediary of a scintillator or fluorescent substance) and further that the element 101 was one of a plurality in view of the detector array 130 of Crawford et al. offering simultaneous reception of x rays in an x ray imaging system. While the systems of Nakagawa et al. and Crawford et al. do not have a conditioner unit or a coldplate, Sasaki et al. teaches that, in an x ray imaging system (Fig. 5) comprising a detector panel 25 having a plurality of solid state detection elements, the presence of a coldplate 42 and a conditioner unit 41 within the system is known. Since the photoelectric transfer elements 10 in the method of Nakagawa et al. and the photodiodes in the method of Crawford et al. will experience the difficulties Sasaki et al. describes for solid-state detection elements at column 1, lines 39-50, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method suggested by Nakagawa et al. and Crawford et al. to comprise the step of controlling (column 5, lines 38-40) a conditioner unit and a coldplate as suggested by Sasaki et al. in order to avoid the problem of temperature nonuniformity. One of ordinary skill in the art must be presumed to know the manner of control suggested by Sasaki et al. (column 5, lines 38-40) and the recited procedure would have been obvious to one of ordinary skill in the art at the time the invention was made in view of



the "arbitrary type of coolant" and the control of "the degree of heating and cooling" described by Sasaki et al.

With respect to dependent claim 11, the measuring, extrapolating, storing, and determining steps are suggested by Crawford *et al.* and Nakagawa *et al.* as explained above in the rejection of independent claim 1.

With respect to independent claim 12, Crawford et al. discloses an x ray imaging system (e.g., Fig. 4) comprising a detector panel 130 having a plurality of photodiodes (column 11, line 49) and a processing circuit 134 electrically coupled with at least one of the plurality of photodiodes. While the system of Crawford et al. does not comprise a closed-loop cooling system, Sasaki et al. teaches in an x ray imaging system (Fig. 5) comprising a detector panel 25 having a plurality of solid state detection elements that the presence of a coldplate 42 closely coupled with the detector panel and a conditioner unit 41 fluidically coupled 43 with the coldplate is known. The conditioner unit 41 in the system of Sasaki et al. is capable of maintaining the detector panel 25 within an operating temperature range. Since the photodiodes in the system of Crawford et al. will experience the difficulties Sasaki et al. describes for solid-state detection elements at column 1, lines 39-50, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Crawford et al. to comprise a coldplate and conditioner as suggested by Sasaki et al. in order to avoid the problem of temperature nonuniformity. The closed-loop cooling system suggested by Sasaki et al. is controlled (column 5, lines 38-40). The system of Crawford et al. determines the temperature of the detector panel 130 using a sensor 521. In view of the desire to avoid the problem of temperature nonuniformity described by Sasaki et al. it would have been obvious to one of ordinary skill in the art at the time the invention was made to electrically couple the processing circuit 134 of Crawford et al. with the conditioner suggested by Sasaki et al. in order to Art Unit: 2878

Page: 8

control the degree of heating and cooling. Although the system of Crawford et al. uses sensor 521 to determine the temperature of the detector panel, Nakagawa et al. shows (Fig. 1) that it is long known to determine the temperature of a photoelectric transfer element 101 in an x ray detection system as a function of the amount of dark current (measured and stored in element 109) generated. Since an external sensor is not required and the construction of the system is simplified, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Crawford et al. to specify that processing circuit 134 produced a signal representing the temperature of the detector panel 130 by measuring the amount of dark current generated by at least one of the plurality of photodiodes as suggested by Nakagawa et al.

With respect to dependent claim 13, the system of Crawford et al. has a stored offset value versus temperature curve (column 18, lines 6-8). Nakagawa et al. shows that measuring an offset value of the photoelectric transfer element without an x ray prior to acquiring an x ray and converting the offset value to a temperature value using an equation and the stored data of offsets and temperatures (see Constitution) is known. It would have been obvious to one of ordinary skill in the art at the time the invention was made to specify that the processing circuit 134 of Crawford et al. determined the temperature of the detector panel 130 by the measurement sequence suggested by Nakagawa et al. in view of the elimination of the temperature sensor 521.

With respect to dependent claim 14, the system of Crawford et al. measures and stores the offset image values in the manner recited (column 17, lines 51-57). Process limitations cannot serve to impart patentability to structures. In re Dike, 157 USPQ 581, 585 (CCPA 1968). Methods of making a claimed product are immaterial in a product claim in view of In re Thorpe, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985) and In re Brown, 459 F.2d 531, 173 USPQ 685 (CCPA 1972). It is axiomatic that the additional presence of process limitations, no matter how detailed, cannot impart

Application/Control Number: 09/683,738

Art Unit: 2878

Page: 9

patentability to a product. In re Pilkington, 411 F.2d 1345, 162 USPQ 145 (CCPA 1969); In re Johnson, 394 F.2d 591, 157 USPQ 620 (CCPA 1968); and In re Stephen, 345 F.2d 1020, 145 USPQ 656 (CCPA 1965). Accordingly, the time of the measurement and storage is not a limitation on the system. Nevertheless, "before actual scanning" as taught by Crawford et al. is a range which encompasses the recited time which is sufficient to anticipate or make obvious the recited time.

With respect to dependent claims 15-18, one of ordinary skill in the art must be presumed to know the manner of control suggested by Sasaki *et al.* (column 5, lines 38-40) and the recited procedures would have been obvious to one of ordinary skill in the art at the time the invention was made in view of the "arbitrary type of coolant" and the control of "the degree of heating and cooling" described by Sasaki *et al.*

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Constantine Hannaher whose telephone number is (703) 308-4850. The examiner can normally be reached on Monday-Friday with flexible hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (703) 308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ch

July 17, 2003

Andrakan kumaker Lukang Eruminer Lukang Eruminer